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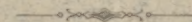
Temporary Compression of the Stump  
in Laparo-Hysterectomy:

A NEW METHOD.

BY

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## TEMPORARY COMPRESSION OF THE STUMP IN LAPARO-HYSTERECTOMY—A NEW METHOD.

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There is one circumstance attending laparo-hysterectomy that always makes it a matter of interest to the surgeon. It is the unexpected that always happens. Unlooked for complications accidents, or matters demanding the exercise of elective measures, render each operation a new experience to the most accomplished expert. The study of each case must be made upon the table; no amount of reading, and no range of experience, other than that which cultivates self-reliance and fertility of expedients, affords aid or comfort to the gynecologist when this operation is resorted to for the removal of uterine fibroids.

This condition of uncertainty prolongs itself from the operating table to the bed-side. It is a study of a couple of cases, made under the latter condition, of which I design to say a few words.

In September, 1891, I removed a uterine fibroid attached squarely to the uterine fundus. The growth measured about six inches in its largest diameter. The broad ligaments had been carried upward and forward by the expansion of the fibroid, nearly to the summit of the growth. In the application of the temporary rope compressor to the uterus I observed that both broad ligaments could not be safely included. One or the other of the ligaments was sure to tear before a sufficient degree of compression was reached. The ligament upon the right side was secured separately and released from the mass, after this the remaining steps of the operation were of the simplest character. The stump was skewered and secured in the loop of a serre-nœud. It was owing to the use of this instrument

that the experience came in. It was a sort of Tait-American modification of the original instrument of Kœberle. The construction was faulty in this. The clutch that held the wire was of steel through which passed a fine brass screw actuated by a key in the handle. When applied at the time of the operation, a sufficient amount of compression was secured by turning the screw, without any difficulty; but when on the second day I attempted to further compress the stump I found that the fine threads on the brass screw were stripped off by the hard steel threads in the clutch as easily as one would cut a piece of cheese. The result was that the stump lay, secured by the skewers in abdominal wound, without any compression at all. As about thirty-six hours had elapsed since the operation I did not anticipate a hemorrhage, but I felt that it was well enough to be prepared, so a strong ligature was thrown round the stump, under the pins, ready to compress the part in case of need. This was the state of affairs until the completion of the third day.

The question of the disposal of the stump then came up for solution. I had in the meanwhile procured another serre-nœud, but I could see no reason, other than in a blind obedience to custom, why it should be applied to the uterine stump, which showed no disposition to bleed, that was visible to its utmost extremity, and that was resting in a wound fortunately yet aseptic. Why not withdraw the pins and allow the stump to recede into the pelvic cavity, and draw the abdominal wound together? This I did, and the stump sank out of sight. A rubber drainage tube was placed in the abdominal wound which was drawn together like a primary incision. The patient promptly recovered without further event.

In this misadventure, there was very much food for thought. It has always appeared to me that the external treatment of the stump; the cutting through of elastic ligatures, or wires; the impossibility of meeting the conditions of aseptic surgery with a sloughing mass in an open wound, all conspired to render this method the most unscientific of any in actual use in this operation. The advocates of the external treatment appear to use their theory on the security against hemorrhage as though that was the greater danger. In fact it is the lesser. Very few die from hemorrhage, many more from sepsis.



I thought I saw a very promising method in thus combining the external and internal treatment. We know, in other forms of pelvic surgery, that if we control hemorrhage twenty-four to thirty-six hours by temporary compression the vessels are occluded and hemorrhage rarely if ever occurs. Temporary compression did so in my case with a very vascular stump, with the addition of some large vessels in the left broad ligament. My plan was to reduce the stump powerfully with the temporary rope compressor, and with the rope in position to place in the depression formed by it the wire of the *serre-nœud*; secure any further compression by the latter instrument that may appear necessary, and remove the temporary compressor. Secure the stump with one skewer and after an interval, if no further tightening of the *serre-nœud* is required, release the stump from compression, but not removing the wire, so that in case any oozing occurs the wire may be tightened. If everything is all right, after ample time is given to test the safety as against hemorrhage, the skewer is removed and the stump is allowed to recede into the pelvic cavity. I did not propose, however, to stitch the peritoneum to the stump as is commonly done in the external treatment. I would secure the peritoneal cavity by careful packing about the stump with sterilized gauze, and thus permit the stump to gravitate into the pelvis without restriction from the adherent peritoneum.

I have had no experience with this method when complicated with a drainage tube.

The only difference in management that appears necessary in the latter case is the necessity of leaving the abdomen open, instead of closing it directly after the receding stump, with a couple of sutures already in position. If, however, the drainage tube can be withdrawn at the same time there would be no difference in procedure.

The critic may object that a degree of compression sufficient to insure against hemorrhage would be very liable to cause sloughing after the part had dropped into the pelvis. I think not for many reasons. In the first place, normal uterine tissue is not composed of material that sloughs readily, on the contrary it has great power of resisting the necrotic process as all have noticed who have watched the sometimes tedious separation of elastic ligature, clamp or *serre-nœud*. This power of

resistance depends upon the proportionally large amount of its elastic connective tissue, strong in proportion to the more compressible muscular elements. This structure would also serve to maintain sufficient capillary circulation to nourish the distal side of the stump. I am also able to bring to bear upon this question some practical experience.

In August, 1884, there appeared in the *New York Medical Journal*, the report of a "Case of Laparo-Hysterectomy for Uterine Fibroids." In March of the same year my friend Dr. Paul F. Munde, kindly read the paper for me before the New York Obstetrical Society. I did the operation Dec. 3rd, 1883. It is not necessary to reprint the details of the case here, but it would make interesting reading for it is ancient history. These were the days of germicides. The sponges were in carbolic acid solution. The drainage tube was syringed out with corrosive sublimate solution and a spray apparatus was working in the room; although I was beginning to break away from the dicta of authority by not directing the current of spray upon my patient. I never did the latter foolish thing but once in my life, some fifteen years ago. There was a large ovarian cyst complicated with two large uterine fibroids, one of which was sessile and the other attached to the uterus by a long thick pedicle. The sessile growth was so firmly incorporated with the cyst wall that removal of the uterus at the neck was imperative. The necessary instruments to do this were not at hand, so everything had to be extemporized upon the spot. I quote from my report:

"The uterine neck was transfixed by a strong needle armed with a double braided silk ligature, which was tied in opposite directions and cut short, and the uterus divided close to the tumor. The uterine stump was lightly cauterized. The stump was transfixed by two steel bonnet pins and brought out of the lower angle of the abdominal wound. The peritoneum was made to embrace the stump by a suture passed through it, modified after the method of Hegar. The uterine stump was dressed with a solution of corrosive sublimate on absorbent cotton, wrung nearly dry, and was kept perfectly dry and free from odor. On the tenth day a thin slough, due to the cautery, separated." As my paper was published as part of the proceedings of the New York Obstetrical Society I never saw the



proof, and was unable to correct a very serious error. Thus, I say in the report that "the ligature upon the uterine stump has not been removed, and has given no trouble." It ought to have read "upon the stump of the pedicle." As a matter of fact the loops of the ligature upon the uterine stump were perfectly loose at the time the film of slough separated, and as it could not be tightened it would, of course, never cut through. It was therefore removed on the eleventh day and the stump secured in the wound by the pins, in order that the stump might be under control in case bleeding ensued. But hemorrhage did not occur and the ligature could have been removed four or five days previously with equal safety. On the nineteenth day the bonnet pins were removed. The stump was firmly united to the abdominal wall.

The reason for the publication of this case was identical with the motive that inspires this paper. Concluding my report I said:

"The case is placed upon record for the following reasons. First, the vitality of the stump was preserved beyond the ligature, by compression with the ligature just sufficient to arrest active hemorrhage, while oozing was checked by slight contact of the actual cautery. In this way we avoided a large sloughing mass in the abdominal wound, as is the case after the use of the *serre-nœud*, or the elastic ligature of Hegar. Second, by securing early union of the stump to the abdominal wall by careful coaptation of the peritoneum around it (Hegar), and thus closing the cavity of the abdomen."

This was practically my first case of temporary compression of the stump. The union between the uterine remnant and the peritoneum was so firm that it never receded into the pelvic cavity. This, of course, violated the technique of the method. The stitching of the peritoneal surfaces of the abdomen and stump together is a necessary procedure where the stump sloughs off under the pressure of an elastic ligature as in Hegar's method, but is not a necessary step in a method designed to prevent this. If the dressings are surgically clean there is no danger of pelvic infection, as is being constantly demonstrated by the use of a properly managed drainage tube. These were, however, the first steps in reaching a complete and definite procedure the purpose of which was temporary compression and release of the stump from the abdominal wound.

In June, 1890, at the Women's and Children's Hospital of Syracuse, an opportunity offered itself to give the method a test deliberately planned. Mrs. G., aged 48, sterile, a small fibroid eccentrically implanted upon the uterine body, the main mass of the tumor to the left. Menstruation was regular and not excessive in amount. The patient was losing flesh and strength rapidly from a nearly constant pelvic pain, which appeared shortly after she became conscious of the growth. The tumor was exposed and lifted out through a moderate incision. The left ovary and tube were found embedded on the lower and anterior surface. I observed that there would be a very short stump and it would offer some difficulties in the way of applying my method; but, as I regarded it as an average case, it would be better to proceed according to my original plan than to wait for one that was exceptionally favorable. In applying the temporary compression the right broad ligament, deflected up to near the summit of the mass, was exposed to strain sufficiently to tear it. It was therefore secured separately by triple interlocking ligatures. The wire of the *serre-nœud* was placed in the depression formed by the rope of the compressor, which was removed before the *serre-nœud* was tightened. In order to reduce the distal side of the stump to a minimum it was pared down, but in so doing I scissored away too much material and undermined the wire, which came off. I was surprised to observe that even after such a brief compression the stump bled only a few drops. The *serre-nœud* was re-applied, but not so tightly by about half a dozen turns of the screw. The stump was lightly touched by a cautery. The uterine and ventral peritoneum were not sutured together. The stump was secured in the wound with two transfixing needles, and the abdomen closed in the usual manner. The dressing was after a method of sealing up in sterilized dry dressings, chemically absorbent, that I have practiced many years. Such a dressing is not to be removed until the wound be healed, as it cannot be replaced in an equally perfect manner as a secondary dressing. On the second day—less than 48 hours, the dressing was taken down and the stump examined. It was perfectly dry and the wire of the *serre-nœud* was relaxed and pressure removed. The pins were left in position, as well as the wire, ready to tighten again in case of oozing. The



dressing was so placed as to allow free inspection on the part of the nurse. I examined again the next day and found the stump dry and evidently in a viable condition in its distal portion. The transfixing needles were withdrawn and the part was free to sink into the pelvis. Adhesions had evidently formed between the two peritoneal surfaces for the part was very slow to recede. The crater left by the stump was drawn drawn together as closely as possible by adhesive straps. Three days later—six days after the operation—the stump was yet visible at the bottom of the wound. The ease and comfort of the patient after the needles were withdrawn was very satisfactory. In two weeks the abdominal opening was nicely filled in and nearly skinned over. Now occurred the first high temperature since the reaction, which did not exceed  $102^{\circ}$ . It was difficult to explain, but was not long in doubt as pus came up in small quantities through the newly filled in lower wound. The opening was enlarged and a drainage tube inserted and daily washed out. The patient was sitting up in four weeks. The fistula remained open for nearly six months closing spontaneously. The wound infection must have taken place after the primary dressing was removed and not sufficiently protected while watching the stump. This error can be easily corrected, probably by wet dressings with tissue protective—a partial revival of the Listerian form. Aside from this accident the progress of the case was without event.

To briefly recapitulate the principles upon which the theory and practice of temporary compression of the stump is founded. In the first place, gynecologists generally admit that the uterine stump is uncertain and treacherous under all forms of treatment. This is due not to the importance of its vessels but to the character of the containing tissue, which causes a progressive shrinking by which the tension of the compression wire or ligature is lessened. It is, however, this tendency to shrink that is one of the factors of safety. If the suture-nœud, or other compressing agency, be sufficient to arrest hemorrhage, the shrinkage of the stump will insure against its renewal. Furthermore, if this contraction of the stump is not followed up by a corresponding tightening of wire, or ligature, the distal side of the stump is not strangulated, does not slough, and is not an offensive mass when dropped back into the pelvic cavity.

That the plan insures against secondary hemorrhage, as the part is in full view with the clamp in position ready to renew the compression in case of need. That, basing my opinion upon my own work, and from the general practice in using temporary compression in total vaginal uterine extirpation, from 40 to 48 hours, in uterine stumps of average size is a sufficiently long time to maintain compression, and if, in the twenty-four following, oozing does not occur the skewers may be withdrawn and the part allowed to recede into the pelvic cavity with safety. That in order to promote this latter part of the procedure the peritoneum of the uterus and abdominal wall are not to be united by suture.

That to protect the abdominal cavity the primary dressing will insure this more perfectly if it consist of sterilized dry, chemically absorbent material, and that the secondary dressing, while the stump is under inspection, ought to consist of wet material as it can be more securely applied and allows the stump to be inspected in a condition as nearly as possible like that of the part after it has returned to the pelvic cavity.

That by this method the retention of a sloughing mass for days, and even weeks, in an open abdominal wound, thus violating both the precept and practice of modern aseptic surgery is avoided, and the convalescence reduced in time to that of other abdominal operations.

That the excessive mortality of laparo-hysterectomy is largely due to external treatment, involving separation by gradual constriction of the uterine stump, and that the trend of theory and practice is to avoid a method so crude and unscientific and full of danger. And, further, that the danger in external treatment of the stump is not from hemorrhage, but from sepsis, that the vessels show but little tendency to bleed even when only compressed but a few moments, and that hemorrhage, if it takes place at all, comes from the vessels in the broad ligaments which are included with the uterine stump in the serre-nœud, which, when necessary, must be guarded against.





